

CLAIMS

1.- A loaded antenna characterized in that the radiating element includes at least two parts, first part consisting on at least one conducting surface, second part being a loading structure, said loading structure consisting on at least a conducting strip, wherein at least one of said strips are connected at least at one point on the edge of said first conducting surface, and wherein the maximum width of said strip or strips is smaller than a quarter of the longest edge of first conducting surface.

2.- A loaded antenna according to claim 1 characterized in that the radiating element includes at least two parts, first part consisting on a conducting surface, second part being a loading structure, said loading structure consisting on at least a conducting strip, wherein the two tips of at least one of the conducting strips are connected at two points on the perimeter of said first conducting surface.

3.- A loaded antenna according to claim 1 or 2 wherein said first conducting surface and second loading structure are lying on the same flat or curved surface.

4.- A loaded antenna according to claim 1,2 or 3 comprising a conducting surface and at least a first and a second strip, wherein said first strip is connected at least at one point on the perimeter of said conducting surface, and wherein said second strip is connected at least by means of one of its tips to said first conducting strip.

5.- A loaded antenna according to claim 1,2,3 or 4 wherein the antenna includes at least a second conducting surface, said second surface featuring a smaller area than first conducting surface, and wherein at least one conducting strip is connected to first conducting surface at one end, and to second conducting surface at the other end

6.- A loaded antenna including a conducting surface and a loading structure according to any of the preceding claims wherein the perimeter of said

conducting surface is shaped chosen from the following set: triangular, square, rectangular, trapezoidal, pentagonal, hexagonal, heptagonal, octagonal, circular or elliptical.

- 5 7.- A loaded antenna including a conducting surface and a loading structure according to any of the claims 1 to 5 wherein at least a portion of said conducting surface is a multilevel structure.

- 10 8.- A loaded antenna including a conducting surface and a loading structure according to any of the preceding claims wherein the shape of at least one loading strip is a curve composed by a minimum of two segments and a maximum of nine segments which are connected in such a way that each segment forms an angle with their neighbours, i.e., no pair of adjacent segments define a larger straight segment.

- 15 9.- A loaded antenna including a conducting surface and a loading structure according to any of the claims 1 to 7 wherein the loading structure includes at least one straight strip, said strip having one end connected to a point on the edge of said conducting surface.

- 20 10.- A loaded antenna including a conducting surface and a loading structure according to any of the claims 1 to 7 wherein the shape of at least one loading strip is a space-filling curve.

- 25 11.- A loaded antenna including a conducting surface and a loading structure according to any of the claims 1 to 7 wherein at least one loading strip is a straight strip with a polygonal shape.

- 30 12.- A loaded antenna including a conducting surface and a loading structure according to any of the claims 1 to 7 wherein the loading structure includes at least two strips, with the first strip with one tip free of connection, or connected to

the second strip, or both tips connected to the second strip or one tip connected to the second strip and the other tip connected to the conducting surface.

5 13.- A loaded antenna including a conducting surface and a loading structure according to any of the claims 1 to 7 wherein the loading structure consists on two or more strips connected at several points on the perimeter of said conducting surface.

10 14.- A loaded antenna according to claim 5,6 or 7 wherein at least the second conducting surface includes a loading structure according to claim 8,9,10,11,12 or 13.

15 15.- A loaded antenna including a conducting surface and a loading structure according to any of the preceding claims wherein a central portion of the conducting surface is removed.

20 16.- A loaded antenna according to any of the preceding claims wherein the antenna is a monopole, said monopole including a ground-plane or ground-counterpoise and a radiating element, said element including at least a conducting surface and a loading structure.

25 17.- A loaded antenna according to any of the claims 1 to 15 wherein the antenna is a dipole including two arms, said arms including at least a conducting surface and a loading structure.

18.- A loaded antenna according to claims 16 or 17 where the radiating element is printed on one of the sides of a dielectric substrate and the load has a conducting surface on the other side of the substrate.

30 19.- A loaded antenna according to any of the claims 1 to 15 wherein the antenna is a microstrip patch antenna and wherein the radiating patch of said antenna includes a conducting surface and a loading structure.

20.- A loaded antenna according to any of the preceding claims, characterized in that the antenna features a multiband behavior, a broadband behavior or a combination of both.

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21.- A loaded antenna according to any of the preceding claims, characterized in that the antenna is shorter than a quarter of the central operating wavelength.

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22.- A loaded antenna any of the preceding claims wherein the antenna is an aperture or slot antenna characterized in that the shape of the slot or aperture is the same as any of the shapes of the radiating elements of the loaded antennas described in the preceding claims.

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23.- A loaded antenna any of the preceding claims characterized in that the radiating element is used in at least one of the selective elements on a frequency selective surface.

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24.- A loaded antenna according to any of the preceding claims, characterized in that the geometry of the surface, the loading structure or both are shaped by means of one or a combination of the following mathematical algorithms: Iterated Function Systems, Multi Reduction Copy Machine, Networked Multi Reduction Copy Machine.